

Amendments to the Claims

This listing of the claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (currently amended): An impedance matching structure for a RF MEMS switch having a closeable RF contact in a RF line, the impedance matching structure including only one protuberance or hump to increase the width of a portion of the RF line immediately adjacent the RF contact to greater than the width of a portion of the RF line removed from the RF contact, wherein the width of the RF contact where the RF contact meets the RF line is less than the width of the portion of the RF line removed from the RF contact.
2. (previously presented): The impedance matching structure of claim 1 wherein the only one protuberance or hump includes a tapered region extending from a relatively narrow portion of the RF line to a relatively wide portion of the RF line, the relatively narrow portion providing a means for conducting RF energy to and/or from the RF contact of the RF MEMS switch.
3. (previously presented): The impedance matching structure of claim 2 further including another tapered region extending from the relatively wide portion of the RF line to a relatively narrow portion of the RF line immediately adjacent the RF contact.
4. (original): The impedance matching structure of claim 2 wherein the relatively wide portion of the RF line is at least twice as wide as the relatively narrow portion of the RF line.
5. (original): The impedance matching structure of claim 2 wherein the relatively wide portion of the RF line is at least five times as wide as the width of the RF contact where the RF contact meets the RF line.

6. (original): The impedance matching structure of claim 2 wherein the MEMS switch has an elongate moveable member for carrying RF energy, the relatively wide portion of the RF line being at least five times as wide as the width of the elongate moveable member.

7. (previously presented): The impedance matching structure of claim 1 wherein the RF MEMS switch is formed on a substrate and wherein the closeable contact is associated with an elongate moveable member having first and second ends, the first end being attached to the substrate and the second end being moveable to and from the substrate for closing the switch at said closeable contact and wherein the impedance matching structure further includes a single protuberance in the RF line immediately adjacent a point where the first end of the elongate moveable member is attached to said substrate.

8. (original): The impedance matching structure of claim 1 wherein the impedance matching structure has a boundary extending away from the RF line, the boundary being defined by a series of straight lines.

9. (currently amended): A RF MEMS switch having two RF contacts disposed on a substrate, the substrate having a ground plane, and a RF conductor for coupling RF energy via the two RF contacts and wherein each of the two RF contacts has an associated single protuberance or hump to increase the width of a portion of the RF conductor immediately adjacent thereto to greater than the width of a portion of the RF conductor removed from the RF contacts, wherein the width of the RF contacts where the RF contacts meet the RF conductor is less than the width of the portion of the RF conductor removed from the RF contacts.

10. (previously presented): The RF MEMS switch of claim 9 wherein the single protuberances or humps in the RF conductor are disposed on the substrate and cooperate with said ground plane to form a capacitive element for impedance matching purposes.

11. (previously presented): The RF MEMS switch of claim 10 wherein at least a portion of the RF conductor is disposed on the substrate as RF lines and wherein another portion of the RF conductor is provided by a moveable member of the MEMS switch, each RF line being coupled to an associated one of the RF contacts and the single protuberance or hump associated with each RF contact occurring in an associated RF line where it connects the associated one of the RF contacts.

12. (currently amended): An impedance matching structure for a RF MEMS switch formed on a substrate, the switch having two closeable RF contacts, a first of the two closeable RF contacts being coupled to a first RF line disposed on the substrate and a second one of the two closeable RF contacts being coupled to a second RF line disposed on the substrate, and an elongate moveable bar for closing a circuit between the two closeable RF contacts, the impedance matching structure comprising a single first protuberance disposed on the substrate to increase the width of a portion of the first RF line immediately adjacent the first one of the two closeable RF contacts to greater than the width of a portion of the first RF line removed from the first one of the two closeable RF contacts and a single second protuberance disposed on the substrate to increase the width of a portion of the second RF line immediately adjacent the second one of the two closeable RF contacts to greater than the width of a portion of the second RF line removed from the second one of the two closeable RF contacts, wherein the width of the first of the two closeable RF contacts where the first of the two closeable RF contacts meets the first RF line is less than the width of the portion of the first RF line removed from the first of the two closeable RF contacts, and wherein the width of the second one of the two closeable RF contacts where the second one of the two closeable RF contacts meets the second RF line is less than the width of the portion of the second RF line removed from the second one of the two closeable RF contacts.

13. (original): The impedance matching structure of claim 12 including tapered regions extending from a relatively narrow portion of the first and second RF lines to relatively wide portions of the corresponding first and second protuberances.

14. (original): The impedance matching structure of claim 13 further including additional tapered regions extending from the relatively wide portions of the first and second RF lines to relatively narrow portions immediately adjacent the corresponding first and second RF contacts.

15. (original): The impedance matching structure of claim 13 wherein the relatively wide portions of each of the first and second protuberances are at least twice as wide as the relatively narrow portions of the corresponding first and second RF lines.

16. (original): The impedance matching structure of claim 13 wherein the relatively wide portions of each of the first and second protuberances are at least five times as wide as the width of the corresponding first and second RF contacts where the RF contacts meet the corresponding first and second RF lines.

17. (original): The impedance matching structure of claim 13 wherein the relatively wide portions of each of the first and second protuberances are at least five times as wide as the width of the elongate moveable bar.

18. (original): The impedance matching structure of claim 13 wherein the first protuberance has a boundary extending away from the first RF line and the second protuberance has a boundary extending away from the second RF line, the boundaries of the first and second protuberances each being defined by a series of straight lines.

19. (currently amended): A method of increasing the return loss of a MEMS switch to a level greater than 20 dB comprising:

a. providing a MEMS switch arranged on a substrate and whose reactance is inductive; and

b. adding at least one capacitor on said substrate, said at least one capacitor having two elements, a first element of said at least one capacitor being formed by a single protuberance formed to increase the width of a portion of a RF line disposed on said substrate immediately adjacent to a RF switch contact on the substrate to greater than

that the width of a portion of the RF line removed from the RF switch contact, and a second element of said at least one capacitor being provided by a ground plane associated with the MEMS switch, wherein the width of the RF switch contact where the RF switch contact meets the RF line is less than the width of the portion of the RF line removed from the RF switch contact.

20. (previously presented): The method of claim 19 wherein said single protuberance projects in a direction away from its associated RF contact.

21. (previously presented): The method of claim 19 wherein said single protuberance has a boundary defined by a plurality of straight lines, at least one of said straight lines being disposed at an angle other than 0° or 90° relative to an edge of the RF line immediately adjacent the single protuberance.

22. (previously presented): An impedance matching structure for a MEMS switch having at least one closeable switch contacting bar, the switch contacting bar when actuated, closing the MEMS switch by making contact with contact pads disposed on a switch substrate, the impedance matching structure including a pair of contact pads, each pad coupled to a signal line having a single protuberance or hump to increase the width of a portion of the signal line adjacent the pad to greater than the width of a portion of the signal line removed from the pad, protuberances or humps forming a π -network impedance matching circuit with the switch contacting bar.

23. (original): The impedance matching structure of claim 22 wherein each protuberance or hump includes a tapered region extending from a relatively narrow portion of an associated signal line to a relatively wide portion of the associated signal line, the relatively narrow portion providing a means for conducting signals to and/or from the MEMS switch.

24. (original): The impedance matching structure of claim 23 further including another tapered region extending from the relatively wide portion of the associated signal line to a

relatively narrow portion of the associated signal line immediately adjacent an associated contact pad.